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EXAMINER
SWICKHAMER, CHRISTOPHER M

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/539,795	Applicant(s) GROW ET AL.
	Examiner Christopher M Swickhamer	Art Unit 2697

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *31 March 2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: '5a-5z' in figure 2, '10' and '12' in figure 3, and '200' in figure 8. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

3. The disclosure is objected to because of the following informalities: On page 5, line 20; data cell '51' is in figure 4b, not 4a. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-8, and 11-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Charny et al (USP 6,072,772, hereinafter Charny). Referring to claim 1, Charny discloses a switching fabric for transmitting data frames to destinations, each data frame having a destination (abstract), the switching fabric comprising: a plurality of input ports for partitioning portions of received data frames to provide data cells (Fig. 1, abstract, col. 6, lns. 15-25); a plurality of switching sections, each switching section being coupled to each input port for receiving data cells at cell transfer intervals on a data link coupled between the input port and switching section (col. 7, lns. 25-45), the switching section being coupled to transmit data cells to any one of a plurality of output ports (col. 7, lns. 5-15), wherein each input port includes logic for scheduling the transmission of each data cell of each data frame received at the input port (col. 6, lns. 65-col. 7, lns. 25), the data frame having a destination associated with an output port, during a cell transfer interval for each data link coupled between the input port and each switching section based upon an ability of the switching section to receive data cells of data frames with a destination associated with the output port (col. 6, lns. 35-55, col. 8, lns. 45-55).

- Referring to claim 2, Charny discloses the switching fabric of claim 1, wherein each of the input ports maintains a plurality of data frame queues of received data frames (Fig. 1), each of the data frame queues corresponding with one of the output ports and having logic for enqueuing data frames having a destination associated with the output port (col. 6, lns. 65-col. 7, lns. 25, lns. 45-55).

- Referring to claim 3, Charny discloses the switching fabric of claim 2, wherein each of the data frames includes a data payload and the input ports provides for each data frame one or more associated data cells including a portion of the data payload, the one or more data cells

associated with the data frame collectively having the data payload of the data frame (col. 6, lns. 10-65), wherein each input port schedules a transmission of each data cell to one of the switching sections on the data link coupled between the input port and the switching section (col. 8, lns. 15-25).

- Referring to claim 4, Charny discloses the switching fabric of claim 3, wherein each input port schedules a transmission of each data cell to one of the switching sections on the data link coupled between the input port and the switching section (col. 6, lns. 65-col. 7, lns. 25).

- Referring to claim 5, Charny discloses the switching fabric of claim 3, wherein for each data link coupled between each input port and each switching section, the input port attempts to schedule a data cell of a partially transmitted data frame, the partially transmitted data frame having at least one associated data cell previously scheduled for transmission to a switching section (col. 6, lns. 10-55), from any of the data frame queues subject to the ability of the switching section to receive data cells of data frames having a destination associated with the output port associated with the destination of the partially transmitted data frame prior to scheduling a transmission of a data cell of a data frame for which no data cells have been previously scheduled for transmission to a switching section (col. 7, lns. 1-55, col. 8, lns. 15-40). Cells with higher priority and older time-stamps are transmitted first. The cells are also guaranteed to arrive within a certain delay period, so packets that are fragmented into smaller sized cells would have priority in scheduling once they have started being transmitted due to their time stamp value and priority.

- Referring to claim 6, Charny discloses the switching fabric of claim 1, wherein each of the switching sections maintains a plurality of data cell queues of data cells received on the data

links coupling the switching section to the input ports, each of the data cell queues corresponding with an output port, each of the data cells in the data cell queue being of a partition of a portion of a data frame having a destination associated with the output port (Fig. 1, col. 6, lns. 15-25).

- Referring to claim 7, Charny discloses the switching fabric of claim 6, wherein each of the data cell queues of a switching section is capable of enqueuing a finite number of data cells at any onetime (col. 7, lns. 55-65), and wherein the ability of a switching section to receive data cells of data frames with a destination associated with an output port is based upon a quantity locations in the data cell queue which are capable of receiving a data cell from an input port (col. 6, lns. 35-55, col. 11, lns. 55-60).

- Referring to claim 8, Charny discloses the switching fabric of claim 1, the switching fabric further including a plurality of output ports, each output port having logic for reassembling data frames having a destination associated with the output port from data cells received from the switching sections coupled to the output port (col. 6, lns. 10-55).

- Referring to claim 11, Charny discloses the switching fabric of claim 1, wherein the switching fabric includes a plurality of output ports and for each of the output ports, each of the switching sections transmits a signal to each of the input ports indicating the ability of the switching section to receive data cells of data frames having a destination associated with the output port (Fig. 1, col. 6, lns. 35-55, col. 7, lns. 1-25).

- Referring to claim 12, Charny discloses a method of transmitting digital data from a plurality of sources to a plurality of destinations (Fig. 1, abstract), the method comprising: receiving data frames at each of a plurality of input ports; partitioning portions of received data frames to provide data cells (col. 6, lns. 10-5); receiving data cells at each of a plurality of

switching sections at cell transfer intervals on a data link coupled between the switching section and an input port (col. 7, lns. 25-45); and transmitting data cells from each switching section to any one of a plurality of output ports; and scheduling the transmission of each data cell of each data frame received at each the input port, the data frame having a destination associated with an output port (col. 7, lns. 1-65, col. 8, lns. 1-15), during a cell transfer interval for each data link coupled between the input port and each switching section based upon an ability of the switching section to receive data cells of data frames with a destination associated with the output port (col. 6, lns. 35-col. 7, lns. 25-55, col. 8, lns. 45-55).

- Referring to claim 13, Charny discloses the method of claim 12, the method further comprising maintaining a plurality of data frame queues of received data frames at each of the input ports, each of the data frame queues corresponding with one of the output ports and enqueuing data frames having a destination associated with the output port (col. 7, lns. 1-45, col. 8, lns. 1-15).

- Referring to claim 14, Charny discloses the method of claim 13, wherein each of the data frames includes a data payload, the method further comprising: providing for each data frame in a data frame queue at an input port one or more associated data cells including a portion of the data payload of the data frame, the one or more data cells associated with the data frame collectively having the data payload of the data frame; and scheduling a transmission of each data cell to one of the switching sections on the data link coupled between the input port and the switching section (col. 6, lns. 10-55, col. 7, lns. 1-55).

- Referring to claim 15, Charny discloses the method of claim 14, the method further comprising scheduling a transmission of each data cell to one of the switching sections on the

data link coupled between the input port and the switching section prior to scheduling a transmission of a data cell of a subsequent data frame in the data frame queue to any of the switching sections (col. 6, lns. 10-55, col. 7, lns. 1-55, col. 8, lns. 15-40). Cells with higher priority and older time-stamps are transmitted first. The cells are also guaranteed to arrive within a certain delay period, so packets that are fragmented into smaller sized cells would have priority in scheduling once they have started being transmitted due to their time stamp value and priority.

- Referring to claim 16, Charny discloses the method of claim 15, the method further comprising, for each data link coupled between each input port and each switching section, attempting to schedule a transmission of a data cell of a partially transmitted data frame, the partially transmitted data frame having at least one associated data cell previously scheduled for transmission to a switching section (col. 6, lns. 10-55), from any of the data frame queues subject to the ability of the switching section to receive data cells of data frames having a destination associated with the output port associated with the destination of the partially transmitted data frame prior to scheduling a transmission of a data cell of a data frame for which no data cells have been previously scheduled for transmission to a switching section (col. 6, lns. 10-55, col. 7, lns. 1-55, col. 8, lns. 15-40). Cells with higher priority and older time-stamps are transmitted first. The cells are also guaranteed to arrive within a certain delay period, so packets that are fragmented into smaller sized cells would have priority in scheduling once they have started being transmitted due to their time stamp value and priority.

- Referring to claim 17, Charny discloses the method of claim 12, the method further comprising, at each switching section, maintaining a plurality of data cell queues of data cells received on the data links coupling the switching section to the input ports, each of the data cell

queues corresponding with an output port, each of the data cells in the data cell queue being of a partition of a portion of a data frame having a destination associated with the output port (Fig. 1, col. 7, lns. 1-55).

- Referring to claim 18, Charny discloses the method of claim 17, wherein each of the data cell queues of a switching section is capable of enqueuing a finite number of data cells at any one time, the method further including determining the ability of the switching section to receive data cells of data frames with a destination associated with an output port is based upon a quantity locations in the data cell queue which are capable of receiving a data cell from an input port (col. 6, lns. 35-55, col. 7, lns. 55-65)

- Referring to claim 19, Charny discloses the method of claim 12, the method further comprising: receiving data cells at each of a plurality of output ports from the switching sections coupled to the output ports; and at each output port, reassembling data frames having a destination associated with the output port from data cells received from the switching sections coupled to the output port (col. 6, lns. 10-55, col. 8, lns. 15-25).

- Referring to claim 21, Charny discloses the method of claim 17, the method further comprising transmits a signal from each of the output ports to each of the switching sections indicating an ability to receive data cells from data links coupling the output port to the switching section (col. 7, lns. 1-45, col. 8, lns. 45-55).

- Referring to claim 22, Charny discloses the method of claim 12, wherein the switching fabric includes a plurality of output ports and for each of the output ports, the method further comprising transmitting a signal from each switching section to each of the input ports indicating

the ability of the switching section to receive data cells of data frames having a destination associated with the output port (col. 7, lns. 1-35, col. 8, lns. 45-55).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 9, 10, 20, and 23-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Charny in view of Momirov (USP 6,484,209). Referring to claim 9, Charny discloses the switching fabric of claim 8, wherein each output port has an output queue and reassembles packets (col. 6, lns. 35-55, col. 8, lns. 5-40), but does not expressly disclose having MAC devices coupled to the output port to send the reassembled packets over the common transmission medium to the associated MAC device. Momirov discloses a switching system with input and output queuing and scheduling using Media Access Controllers (MACs) with MAC devices. The MAC packets are fragmented at the input queue and reassembled at the output queue (Fig. 3, col. 7, lns. 10-30, col. 8, lns. 25-68). The system of Charny could be modified to include MAC devices and to use the reassembly portion of Charny's system to reassemble MAC packets to be sent to MAC devices. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the system of Charny, with the ability to process information to be sent to MAC devices. One of ordinary skill in the art would have been motivated to do this

since MAC information can be used to determine destination addresses in the packet so that the packet can be routed through the switch core (col. 9, lns. 5-25).

- Referring to claim 10, Charny discloses the switching fabric of claim 9, wherein each of the output ports transmits a signal to each of the switching sections indicating an ability to receive data cells from data links coupling the output port to the switching section (col. 6, lns. 35-55, col. 7, lns. 1-25).

- Referring to claim 20, Charny discloses the method of claim 19, but does not expressly disclose the method further comprising, at each output port, maintaining a media access control (MAC) queue of reassembled data frames to be transmitted to one or more MAC devices through a common transmission medium, the destination of each reassembled data frame in the MAC queue being associated with the MAC device. Momirov discloses a switching system with input and output queuing and scheduling using Media Access Controllers (MACs) with MAC devices. The MAC packets are fragmented at the input queue and reassembled at the output queue (Fig. 3, col. 7, lns. 10-30, col. 8, lns. 25-68). The system of Charny could be modified to include MAC devices and to use the reassembly portion of Charny's system to reassemble MAC packets to be sent to MAC devices. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the system of Charny, with the ability to process information to be sent to MAC devices. One of ordinary skill in the art would have been motivated to do this since MAC information can be used to determine destination addresses in the packet so that the packet can be routed through the switch core (col. 9, lns. 5-25).

- Referring to claim 23, Charny discloses in a data communication network including a plurality of host computers for transmitting data packets to a plurality of destinations, each

destination being associated with a device having an address (Fig. 1, abstract), the improvement including: a plurality of output ports, each of the output ports being coupled to at least an associated one of the devices for transmitting data frames to the at least one device according the address associated therewith (col. 5, lns. 45-60); a look-up engine for receiving the data packets from the host computers and forming intermediate data frames based upon the data packets (col. 6, lns. 15-25), the intermediate data frames having information identifying an output port associated with one of the destinations the network device in a header and a data payload (col. 6, lns. 10-55); a plurality of input ports for receiving the intermediate data frames from the lookup engine, each of the plurality of input ports partitioning the data payload of at least some of the intermediate frames received at the input port to provide a plurality of data cells (col. 6, lns. 10-55, col. 7, lns. 45-55); a plurality of switching sections, each switching section being coupled to each input port for receiving data cells at cell transfer intervals on a data link coupled between the input port and switching section (col. 7, lns. 25-45), the switching section being coupled to transmit data cells to any one of the plurality of output ports, wherein each input port includes logic for scheduling the transmission of each data cell of each intermediate data frame received at the input port during a cell transfer interval for each data link coupled between the input port and each switching section based upon an ability of the switching section to receive data cells of data frames associated with the output port (col. 7, lns. 1-55, col. 8, lns. 45-55). Charny does not expressly disclose using MAC information and MAC devices as the packets disassembled and reassembled at the output and input queues respectively. Momirov discloses a switching system with input and output queuing and scheduling using Media Access Controllers (MACs) with MAC devices. The MAC packets are fragmented at the input queue and reassembled at the

output queue (Fig. 3, col. 7, lns. 10-30, col. 8, lns. 25-68). The system of Charny could be modified to include MAC devices and to use the reassembly portion of Charny's system to reassemble MAC packets to be sent to MAC devices. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to combine the system of Charny, with the ability to process information to be sent to MAC devices. One of ordinary skill in the art would have been motivated to do this since MAC information can be used to determine destination addresses in the packet so that the packet can be routed through the switch core (col. 9, lns. 5-25).

- Referring to claim 24, Charny discloses the data communication network of claim 23, wherein each of the input ports maintains a plurality of data frame queues of received data frames, each of the data frame queues corresponding with one of the output ports and enqueuing data frames having a destination associated with the output port (Fig. 1, col. 8, lns. 1-15, col. 7, lns. 45-55).

- Referring to claim 25, Charny discloses the data communication network of claim 24, wherein each of the data frames includes a data payload and the input ports provides for each data frame one or more associated data cells including a portion of the data payload, the one or more data cells associated with the data frame collectively having the data payload of the data frame, wherein each input port schedules a transmission of each data cell to one of the switching sections on the data link coupled between the input port and the switching section (col. 6, lns. 10-55, col. 7, lns. 45-55).

- Referring to claim 26, Charny discloses the data communication network of claim 25, wherein each input port schedules a transmission of each data cell to one of the switching

sections on the data link coupled between the input port and the switching section prior to scheduling a transmission of a data cell of a subsequent data frame in the data frame queue to any of the switching sections (col. 7, lns. 55-65).

- Referring to claim 27, Charny discloses the data communication network of claim 25, wherein for each data link coupled between each input port and each switching section, the input port attempts to schedule a data cell of a partially transmitted data frame (col. 6, lns. 10-55), the partially transmitted data frame having at least one associated data cell previously scheduled for transmission to a switching section, from any of the data frame queues subject to the ability of the switching section to receive data cells of data frames having a destination associated with the output port associated with the destination of the partially transmitted data frame prior to scheduling a transmission of a data cell of a data frame for which no data cells have been previously scheduled for transmission to a switching section (col. 7, lns. 1-55, col. 8, lns. 15-40). Cells with higher priority and older time-stamps are transmitted first. The cells are also guaranteed to arrive within a certain delay period, so packets that are fragmented into smaller sized cells would have priority in scheduling once they have started being transmitted due to their time stamp value and priority.

- Referring to claim 28, Charny discloses the data communication network of claim 23, wherein each of the switching sections maintains a plurality of data cell queues of data cells received on the data links coupling the switching section to the input ports, each of the data cell queues corresponding with an output port, each of the data cells in the data cell queue being of a partition of a portion of a data frame having a destination associated with the output port (col. 7, lns. 25-45).

- Referring to claim 29, Charny discloses the data communication network of claim 28, wherein each of the data cell queues of a switching section is capable of enqueuing a finite number of data cells at any one time, and wherein the ability of a switching section to receive data cells of data frames with a destination associated with an output port is based upon a quantity locations in the data cell queue which are capable of receiving a data cell from an input port (col. 7, lns. 45-65).

- Referring to claim 30, Charny discloses the data communication network of claim 23, wherein each output port includes logic for reassembling data frames having a destination associated with the output port from data cells received from the switching sections coupled to the output port (col. 6, lns. 35-55).

- Referring to claim 31, Charny discloses the data communication network of claim 30, wherein each output port is coupled to each MAC device associated with the output port through a common transmission medium and wherein each output port maintains a MAC queue of reassembled data frames for transmission to the associated MAC devices, the destination of each reassembled data frame in the MAC queue being associated with the MAC device (see reference to claim 23).

- Referring to claim 32, Charny discloses the data communications network of claim 31, wherein each of the output ports transmits a signal to each of the switching sections indicating an ability to receive data cells from data links coupling the output port to the switching section (col. 8, lns. 45-55).

- Referring to claim 33, Charny discloses the data communication network of claim 23, wherein for each of the output ports, each of the switching sections transmits a signal to each of

the input ports indicating the ability of the switching section to receive data cells of data frames having a destination associated with the output port (col. 8, lns. 45-55).

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Wang et al, USP 2001/0025332 A1. *Crossbar integrated circuit with parallel channels for a communication device.*
- Holden, USP 6,151,301. *ATM architecture and switching element.*
- Holden, USP 6,134,218. *Many dimensional congestion detection system and method.*
- Caldara et al, USP 5,748,629. Allocated and dynamic bandwidth management.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher M Swickhamer whose telephone number is (703) 306.4820. The examiner can normally be reached on 8:00-4:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (703) 305.4798. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-9571 for regular communications and (703) 872.9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305.3900.

CMS
June 24, 2003

RICKY NGO
PRIMARY EXAMINER